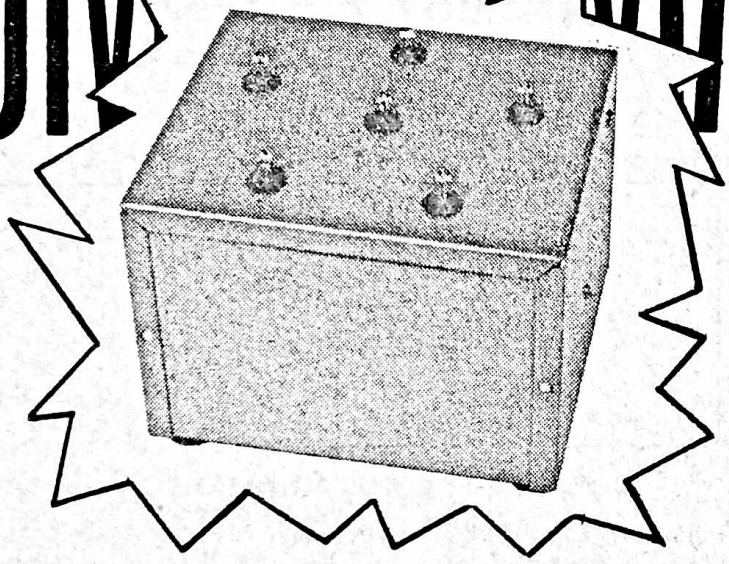
COMPUTOMATIC



Here's a Black Box that sees, hears, and does nothing—except wow your friends and give your shack that sharp UNIVAC look

By Herb Friedman, W2ZLF/KBI9457

It sits on your desk with its lights blinking, and the sounds of the computer world come from inside. In fact, it looks for all the world like it might really be a computer! But in spite of all the *eep* and *eep-oop* sounds and the blinking lights, the Computomatic does absolutely nothing; it just sits there and appears to be calculating the National Debt.

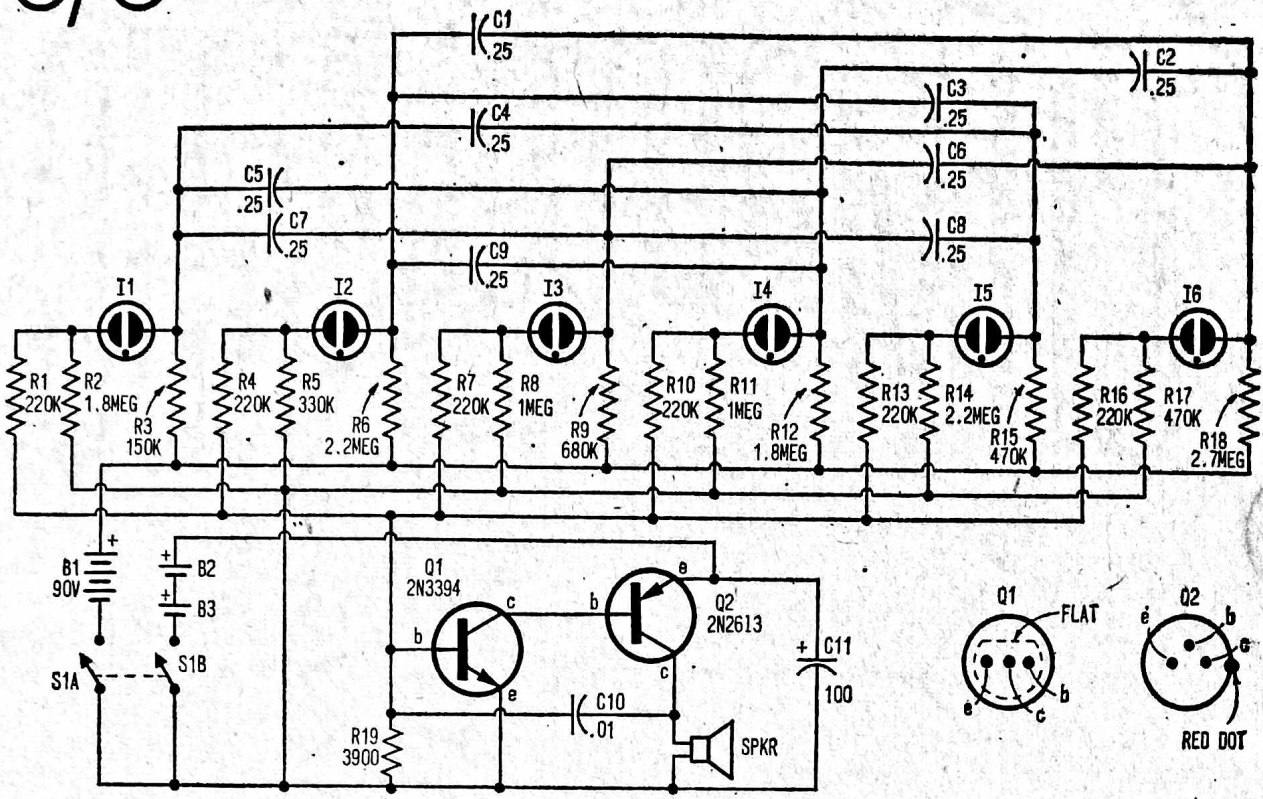
The Computomatic is basically a nothing box—but with one big difference. Instead of having mere lights that blink on and off at a random rate, this gadget has an internal vari-tone oscillator that is actually triggered by the lights. As each light turns on, a soft *eep, eep-oop,* or glide tone is generated.

Just as the random light pattern slowly changes, so does the sound pattern. And soon the listener finds that exactly at the moment he thinks he has discovered the rhythm of the sound pattern, the light pattern makes a slight change and the sounds follow with a similar change in sequence. At one moment you may hear a clock inside the box (accompanied by a glide tone), while the next moment your clock shifts into a sweep that mystifies.

The Computomatic has a nothing-box circuit and a two-stage multi-tone generator. Both circuits are battery-powered; current drain is so low the batteries should deliver several months of service—possibly even more, depending on how often the device is used.

Assembly. The Computomatic is built into a 4 x 5 x 6-in. aluminum chassis box. The circuitry is mounted on a perf board positioned on one side panel. Push-in terminals are used for tie points. The miniature speaker goes on the opposite side.

Capacitors for the lighting circuits—C1 through C9—take up quite a bit of space



PARTS LIST FOR COMPUTOMATIC

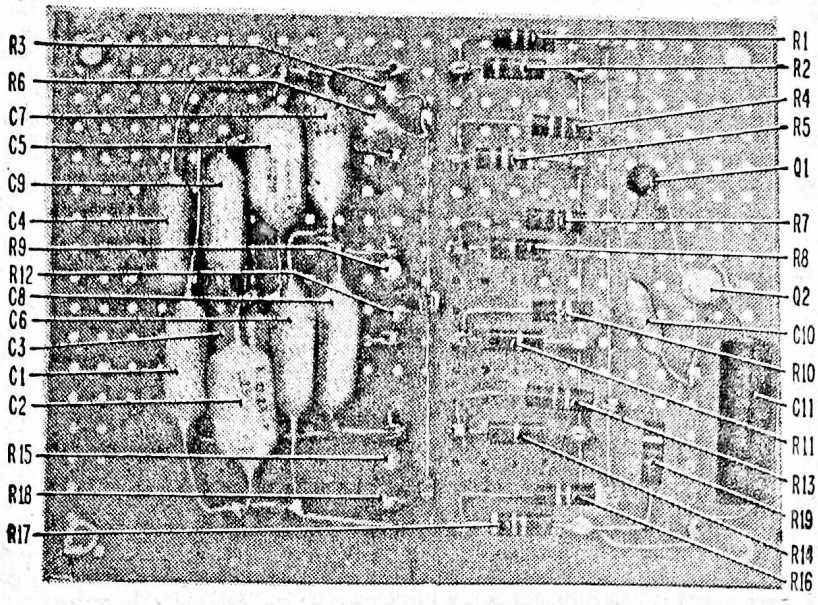
B1—90-V battery (RCA VS090 or equiv.)
B2, B3—1.5-V AA battery (Burgess Z or equiv.)
C1 thru C9—.25-uF, 100-VDC capacitor
C10—.01-uF, 25-VDC (minimum) capacitor (see text)
C11—100-uF, 15-VDC (minimum) capacitor
I1 thru I6—NE-2 or NE-2E neon lamp
Q1—2N3394 npn silicon transistor (GE)
Q2—2N2613 pnp germanium transistor (RCA)
R1, R4, R7, R10, R13, R16—220,000-ohm, ½-watt 10% resistor
R2—1,800,000-ohm, ½-watt 10% resistor
R3—150,000-ohm, ½-watt 10% resistor
R5—330,000-ohm, ½-watt 10% resistor
R6, R14—2,200,000-ohm, ½-watt 10% resistor
R8, R11—1,000,000-ohm, ½-watt 10% resistor
R9—680,000-ohm, ½-watt 10% resistor
R12—1,800,000-ohm, ½-watt 10% resistor
R15, R17—470,000-ohm, ½-watt 10% resistor
R18—2,700,000-ohm, ½-watt 10% resistor
R19—3900-ohm, ½-watt 10% resistor (see text)
S1—Dpst toggle switch
Misc.—4 x 5 x 6-in. aluminum chassis box, 4½ x 3½-in. perf board, miniature 8-ohm speaker (approx. 2¼ x 2¾ in.), push-in terminals, battery connector for B1 (Allied 18B5309 or equiv.), AA battery holder (Keystone 140, Allied 18B5902 or equiv.), ¼-in. spacers, rubber feet, grommets, spaghetti, wire, solder, hardware, etc.
Note—Values of R1 thru R18 may vary ± 20%. If you have these values in your junk box, use them.

so use at least half of the perf board to wire them. Your board should be cut so it takes up the entire side of one panel, with only enough clearance at the sides so that the cabinet cover can be installed.

Since capacitors C1 through C9 take up a lot more space than appearance would dictate, position the terminals they are connected to in a line running through the center of the board. While it may appear that half the board is overdoing it, you'll have just enough space when they're finally installed. Make certain none of these leads are shorting. If necessary, use spaghetti when in doubt about your wiring.

Capacitors C1 through C9 should be rated for a working voltage of at least 100 VDC (see Parts List). Capacitor C10 can be a 25-V model or the same as C1-C9. Make certain C11 is installed in the polarity shown, with the positive lead connected to Q2's emitter. You will have to use the transistors specified in the Parts List; don't try to substitute for them.

Blinking 'n Pulsing. After the perf-board assembly is completed, set it aside until you



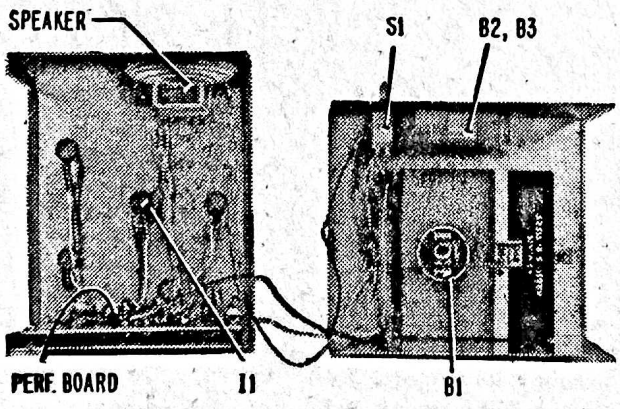
All components except neon lamps and miniature speaker are mounted on perf-board subassembly. Capacitors at left take considerable amount of space, so their connecting terminals should be positioned in center of board to allow maximum space on left side. Three bus leads are used to simplify wiring resistors to neon lamps. Schematic conforms to wiring pattern, but order is reversed looking from left to right on diagram. Double-check all leads.

have installed the speaker and six neon lamps. The neon lamps I1 through I6 are types NE-2 or NE-2E. Don't substitute one with higher brightness (like the NE-2H) as the resistors specified are only for the NE-2 or NE-2E.

Mount the lamps on top of the cabinet's main section. Each lamp is mounted in a ⅜-in. rubber grommet and cemented in place with a silicon rubber adhesive. Since I1 pulses rather than blinks, it should be installed in the *center* so that the blinking lights are on the outside. (This pulsing is required to trip the glide tone. Don't attempt to get the bulb to blink.)

Use any 8-ohm miniature speaker that will fit in the box. It should be mounted on a side panel with no holes for a grille. If you drill holes in the panel the sound will be excessively loud, but without holes the sound will be soft and appear to come from deep inside the Computomatic.

Now install the perf-board assembly. To prevent the push-in terminals which protrude through the board from shorting to the cabinet, install ¼-in. spacers between the board and cabinet. To avoid a wiring error, install I1's connections first. The remaining lamps can be wired in any order. Be sure to insulate both leads from the lamps. Slip a piece of spaghetti (sleeving) over the hookup wire, tack-solder the lamp's leads to the wire, and then slide the sleeving forward so it covers the leads flush with the glass.



Battery B1 is held in place by hookup wire which passes through two cable clamps; twist ends together.

The batteries mount in the bottom portion of the cabinet. Battery B1 is a type used in older portable radios. If you can obtain a smaller or less expensive model, by all means make the substitution. It is held in place with a loop of wire stretched between two cable clamps—one at either end of the battery.

If you use a standard battery connector, check the connecting wires from the terminals. Electric (black is positive) rather than electronic (black is negative) color coding may be used. Batteries B2 and B3 are standard AA cells mounted in a double-AA battery holder. Wire the batteries through a dpst switch, but don't tie the negative leads from B1 and B3 together through an spst switch.

Because of individual variations in transistors, the tone generator may not trigger with the lamps. If this should happen, try different values for R19—either higher or lower, in 20% steps—until the generator fires in step with the lamps. If you obtain only a constant tone, trim R19's value until you obtain the glide.

If you've done a good job, your Computomatic will take over from here. Just turn it on and watch your bench light up and sound off like any good UNIVAC should. After all, what's wrong with having the first programmed shack on the block? ■